June 13, 2013

Mr. James Saric
Remedial Project Manager
USEPA Region 5
77 West Jackson Boulevard
Mail Code: SR-6J
Chicago, IL 60605-3507

Subject:
Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site
Area 3/Former Otsego Impoundment: Supplemental Field Sampling Plan

Dear Mr. Saric:

This letter presents a field sampling plan for collecting floodplain and bank soil samples in Area 3, the former Otsego Impoundment, to support completion of a supplemental remedial investigation and feasibility study (SRI/FS) in Area 3. The sampling work proposed herein is supplemental to sampling performed in 2012 under the March 2012 *Area 3/Former Otsego Impoundment Supplemental Remedial Investigation/Feasibility Study Work Plan* (Area 3 SRI/FS Work Plan; ARCADIS 2012a), approved by the United States Environmental Protection Agency (USEPA) on May 10, 2012.

This *Area 3/Former Otsego Impoundment Supplemental Field Sampling Plan* (Area 3 Supplemental FSP) was developed based on the results of field reconnaissance and analytical sampling presented in the *Area 3/Former Otsego Impoundment Proposed Reconnaissance Plan and Preliminary Sampling Design* (Reconnaissance Plan; ARCADIS 2012b) and the *Area 3/Former Otsego Impoundment Proposed Field Sampling Plan* (Field Sampling Plan; ARCADIS 2012c) approved by USEPA on June 26, 2012 and October 6, 2012, respectively. These prior activities were designed and implemented to meet the objectives identified in the Area 3 SRI/FS Work Plan. Further evaluation and analysis of the data collected has identified the need for additional data which is addressed by this sampling plan. Data collected will be included in the draft Area 3 *S*upplemental Remedial Investigation Report (Area 3 SRI Report).

This Area 3 Supplemental FSP describes sampling to accomplish the following:

- Characterize floodplain and bank soil PCB concentrations in low-lying residential areas on the south bank between North Street Bridge and the Otsego Waste Water Treatment Plant (this area referred to as the residential area for purposes of this FSP).
- Further characterize soil PCB concentrations at the outlet of the abandoned former mill race channel on the south bank downstream of Farmer Street.
- Address identified data gaps with respect to floodplain soil PCB concentrations in selected other areas of Area 3.

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www.amec.com

Proposed sampling locations presented herein were selected based on PCB data from currently available samples in Area 3 field observations, and on discussions with USEPA and Michigan Department of Environmental Quality (MDEQ) representatives.

Area 3 Phase 3 Supplemental Sampling Activities
Sampling and analysis will be performed in accordance with the *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site* (ARCADIS 2010).

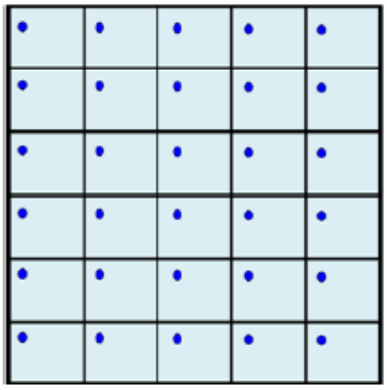
Proposed Residential Area Floodplain Soil Samples

The residential area that is addressed in this FSP is shown on Figure 1. The purpose of sampling in this area is to provide information to the EPA and MDEQ that they may communicate to homeowners regarding potential exposure risk to PCBs. Information from the sampling will also be used to support a future ecological risk assessment.

Incremental sampling (IS) is proposed for the residential area. There are 17 residences along this stretch of the Kalamazoo River that are included in the study. Nine of the residential yards will be targeted for sampling as representative. The specific residences will be determined following receipt of responses to access requests.

IS will be completed in accordance with the Interstate Technology & Regulatory Council (ITRC) *Guidance on Incremental Sampling Method* (February 2012). IS methods improve the reliability of sample data by reducing the variability of the data as compared to conventional discrete sampling strategies (Ramsey et. al., 2005; Jenkins et al., 2005). IS data generally have lower variability than discrete sample data and higher reproducibility. Higher reliability supports greater confidence for decision-making.

Decision units (DUs) for the sampling conducted in the residential area are highlighted on Figure 2 and represent the residence backyard, i.e. the back of the house to the river's edge. The backyard was selected as the DU because it represents a typical exposure area for a riverside residence. Within each DU, sub samples or aliquots are collected from random points within the defined area. Thirty aliquots will be collected to represent the DU. Thirty aliquots was selected to represent the DUs for the residential sampling due to the morphologic similarities of the properties. IS samples will be collected as shown, using systematic random sampling to guide collection of aliquots. The method of systematic random sampling identifies points at a fixed interval throughout the sampling frame or DU after a random start. Aliquots are collected at each point within the DU.



Systematic Random Sampling /systematic grid sampling with a random start.

Two depth intervals will be sampled; the 0-6 inch interval and 6-12 inch interval. Each depth interval will represent a separate DU, hence one backyard will have an IS collected to represent the 0-6 inch interval and 6-12 inch interval. For each DU, the IS will be collected using the following procedures:

- The corners of each of the DUs will be located and recorded using a digital global positioning system and marked using wooden stakes.

- The sampling grid will be developed with grid nodes spaced evenly across the DU, in accordance with *the ITRC Incremental Sampling Method* (February 2012).
- Approximately equal sample volume aliquots will be collected using a small-diameter push probe or step–probe.
- The 30 aliquots collected from each incremental sample area and specific depth interval will be placed in a labelled container for transport to the laboratory.
- At the laboratory, the sample will be dried, and sieved, and coarsely milled for analysis of PCBs.

For purposes of quality assurance, two replicate samples will be collected from three of the nine backyards. The field replicate samples will be collected from the same DU as the initial sample using the same methodology to equally represent the same area, spatial location and time frame. The starting points for collecting the field replicate aliquots within the DU will be offset approximately 3 feet from the initial starting point so as not to collect aliquots from the same locations within the DU. Replicate samples will be submitted as "blind" to the laboratory and will be used to evaluate precision or the reproducibility of the sampling effort.

IS for Ecological Risk Assessment

Sampling for ecological evaluation is proposed for the residential area between the study boundary and the water's edge as depicted in Figure 2. The DU will run parallel to the river and encompass an area of approximately one acre. The size of the DU is one acre to be consistent with ecological receptors considered for evaluations conducted in Area 1. The study boundary is the 683 foot NGVD elevation as described in the Area 3 Supplemental Remedial Investigation Work Plan (AMEC 2013). For the purposes of this sampling event, the one acre ecological habitat will cross multiple residential properties. The same systematic random sampling method used for the residential backyards will be used for the ecological study area (30 aliquots of soil on a regularly spaced grid). Two depth intervals will be sampled, 0-6 inches and 6-12 inches.

Proposed Residential Area Bank Soil Samples

Discrete samples will be collected to characterize the bank material in the residential area, where grey materials have been visually identified during reconnaissance activities. Six bank samples from these locations will be collected at regular intervals (i.e., unbiased) along the bank and sent to the laboratory for PCB analysis (Figure 3a). Up to three additional biased samples targeted to visible grey material will also be collected. Discrete sampling methods will be used to collect the bank samples, utilizing a Lexan® tube or hand auger for retrieval of soil cores. Prior to sample collection, the bank area will be photographed to document physical conditions. Discrete sample collection will proceed advancing Lexan® core tubes or a hand auger vertically at the edge of the bank to refusal. At each location the core will be observed, classified and logged into a field logbook. Three intervals will be sampled at each location; the grey material interval, the interval above the grey material, and the interval below the grey material. If the grey material is not encountered, samples will be collected from the interval(s) consistent with previous sampling, where a grey layer was encountered.

Proposed Floodplain Soil Samples in Former Mill Race Outlet

During the Phase 2 sampling, two floodplain soil cores (OFP-076 and OFP-077 depicted on Figure 4) were collected in the western end of the former mill race (the outlet), downstream of the Farmer Street Bridge. Floodplain sample core OFP-077 was located at an elevation of 701.4 feet National Geodetic Vertical Datum of 1929 (NGVD 29) and advanced to a depth of

five feet below ground surface (bgs). Six samples were collected from this core and each was reported as non-detect for total PCBs. Floodplain sample core OFP-076 was located in an area of lower elevation (684 feet NGVD 29) and advanced five feet bgs. The maximum PCB concentration within the core was 40 milligrams per kilogram (mg/kg) in the 27 to 36-inch interval.

To further characterize soil PCB concentrations near the outlet of the former mill race, three floodplain transects will be established as shown in Figure 4. Three floodplain soil cores equally spaced along each transect will be collected from each of the three transects (nine total cores) to define the extent of PCB impacts in this area. The soil cores will be advanced to target a depth of four to five feet bgs or until refusal using Lexan® core tubes or a hand auger as determined at the discretion of the field team based on field conditions at the time of collection. The cores/samples will be visually described according to the USCS and photographed for future reference. The core locations will be surveyed.

Samples collected from the nine cores will be submitted to the laboratory. Samples from the middle transect will be analyzed for PCB Aroclors and TOC first while the others are held in frozen storage at the laboratory until the results are reported. The remaining samples from the other two transects will be analyzed only if the PCB concentration in the sample from adjacent transect is above two mg/kg. This threshold concentration was selected for purposes of characterizing step-out locations based on the *Area 1 Focused Step-Out Sampling Work Plan* (ARCADIS 2009).

Other Proposed Floodplain Samples

A total of eight floodplain soil cores will be collected from other locations in Area 3 to further characterize soil PCB in areas of identified data gaps at locations shown on Figures 3a and 3b. The purpose of these samples is to supplement existing data, where the existing sample network was deemed inadequate. Each of these locations is described below:

- One core will be collected on the north bank of the river just downstream of the Farmer Street Bridge at the request of MDEQ.
- One core will be collected immediately upstream of the M-89 Bridge on the western bank. A bank survey was completed in this area during the Phase 2 investigation (OTBN-21), but no samples were collected.
- Two cores will be collected from the Previous Channel 09. Two cores previously collected in this area during the Phase 2 investigation (OFP-069 and bank sample OTBS-22) had total PCB concentrations above 10 mg/kg in the top 12 inches of the core. Two additional floodplain samples will be collected in this area, one core at the southern extent of Previous Channel 09 and one at the northern extent near the bank sample OTBS-22. During reconnaissance activities, fine-grained materials were identified close to the bank on the south side of the river upstream of M-89 in the Previous Channel 09 area.
- One core will be collected to the north of the western end of Previous Channel 07. Bank sample OTBN-13 was collected during the Phase 2 investigation within the Previous Channel 07 boundary. The proposed sample will be to the north of this location outside of the previous channel.
- Three cores will be collected from the area between the Previous Channels 03 and 04. The proposed locations for these cores are at higher elevations (684 to 689 feet NGVD

29) than Previous Channel 03 and Previous Channel 04 and no floodplain samples have been previously collected in this area.

Soil samples will be advanced until refusal using Lexan® core tubes or a hand auger as determined at the discretion of the field team based on field conditions at the time of collection. Samples from 0- to 6-inch, 6- to 12-inch, and 12 to 24-inch interval will be collected and analyzed for PCBs. If grey material is encountered in the borings at depth, an additional sampling interval (below the grey layer) will be added. Surface soil samples will also be analyzed for TOC. Cores/samples will be visually described according to the USCS and photographed for future reference. The core locations will be surveyed using GPS.

Non PCB Sampling

Non PCB sampling is proposed for sediments and soils at locations where PCBs were previously identified. The sampling will include locations with PCB detections in the following three ranges; ND-0.50 mg/kg, 0.50-5.0 mg/kg and >5.0 mg/kg. Table 1 contains a list of the sample locations, including sample depth interval that will be re-sampled for non PCB constituents. Figure 5 illustrates the locations of proposed sampling. Non PCB constituents include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, metals, mercury, and dioxin/furan. Sample handling and analysis will be performed in accordance with the Site –Wide FSP and QAPP.

Table 1 Proposed Non PCB Sampling Locations

Location ID	Northing	Easting	Date	Depth Interval (inches)	PCB Result	
Floodplain Soil						
OFP-036	352916.6	12753928.1	27-Sep-12	0 - 7.5	0.11	mg/kg
OFP-076	353497.3	12763666	25-Oct-12	0 - 6	0.126	mg/kg
OES6-4	354321.015	12750838.72	16-Feb-94	0 - 6	0.13	mg/kg
OTBN-14	352341.8	12754921.6	19-Oct-12	0 - 6	0.163	mg/kg
OFP-031	351542.8	12753423.8	10-Oct-12	0 - 6	0.168	mg/kg
OTBN-17	352428.9	12756275.7	09-Oct-12	0 - 6	0.744	mg/kg
OES5-4	354085.442	12751084.63	15-Feb-94	0 - 6	0.85	mg/kg
OFP-002	354500.4	12750455.1	25-Sep-12	0 - 6	1.93	mg/kg
OFP-068	352578	12757657.6	09-Oct-12	0 - 6	2.36	mg/kg
OTBN-18	352439.9	12756711.2	09-Oct-12	0 - 6	2.47	mg/kg
OFP-046	351720	12754738.8	25-Sep-12	0 - 6	3.61	mg/kg
OFP-050	351873.2	12755174	25-Sep-12	0 - 6	4.09	mg/kg
OES4-2	353173.751	12751978.32	14-Feb-94	0 - 6	6.31	mg/kg
OTBS-17	352240.853	12756260.97	17-Oct-12	0 - 6	9.51	mg/kg
OTBS-08	352496.6	12752482.1	18-Oct-12	0 - 6	11.06	mg/kg
OTBN-20	352735.2	12757384.9	04-Oct-12	0 - 6	12	mg/kg
OTBS-32	353964.5	12759885.2	04-Oct-12	0 - 4	19	mg/kg
Sediment						
KP14C-6	351986.499	12754355.32	05-Jul-00	0 - 2	0.657	mg/kg
ORT-11 (1+93)	351974.3	12753771.7	16-Oct-12	0 - 2	0.749	mg/kg
ORT-08 (0+10)	352534.6	12752534.8	16-Oct-12	0 - 2	0.928	mg/kg
KPT90-7	352088.358	12753397.22	09-Jul-97	0 - 2	1.05	mg/kg
FF-66	351362.973	12753747.98	11-May-00	0 - 2	0.14	mg/kg
FF-66	351362.973	12753747.98	11-May-00	2 - 6	0.074	mg/kg
FF-66	351362.973	12753747.98	11-May-00	6 - 12	15.7	mg/kg
OSED-06	351425.347	12754541.32	12-Jul-12	6 - 11	6.89	mg/kg
OSED-08	351206.221	12754687.44	12-Jul-12	0 - 2	5.88	mg/kg
OSED-08	351206.221	12754687.44	12-Jul-12	2 - 6	11.7	mg/kg
OSED-08	351206.221	12754687.44	12-Jul-12	6 - 10	12.5	mg/kg
OSED-10	351243.826	12754048.19	12-Jul-12	0 - 2	0.039	mg/kg
OSED-10	351243.826	12754048.19	12-Jul-12	2 - 6	0.04	mg/kg

SCHEDULE

AMEC will schedule and initiate survey and sampling activities in collaboration with agency personnel following approval of this plan by USEPA and completion of necessary access agreements with land owners. Field work will be performed under agency oversight by AMEC personnel familiar with the area and Site. Work will be performed consistent with the methods and protocols set forth in the Multi-Area guidance documents (Multi-Area Quality Assurance Project Plan, Multi-Area Field Sampling Plan and Multi-Area Health and Safety Plan; ARCADIS 2010 and ARCADIS BBL 2007a and b, respectively). Our goal is to complete all field work in July and to receive laboratory results for submitted samples by the end of August. Remaining sampling needs will be identified after review of results, if evident.

If you have questions about the proposed sampling program or the information presented in this letter please contact us.

Sincerely yours,

AMEC Environment & Infrastructure, Inc.

Garret Bondy
Project Manager

Cynthia Draper
Project Principal

Anita Emery-DeVisser
Senior Scientist

cc:
Paul Bucholtz, MDEQ
Jeff Keiser, CH2M HILL
Garry Griffith, P.E., Georgia-Pacific, LLC

References:

ARCADIS. 2009. *Kalamazoo River SRI Phase 2 Core Analyses – Focused Step-out Sampling – Crown Vantage Landfill to Plainwell No. 2 Dam. April 16, 2009.*

ARCADIS. 2010. *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site*. March 2010.

ARCADIS. 2012a. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Area 3/Otsego Impoundment Supplemental Remedial Investigation/ Feasibility Study Work Plan.* March 2012.

ARCADIS. 2012b. *Area 3/Former Otsego Impoundment Proposed Reconnaissance Plan and Preliminary Sampling Design*. June 2012.

ARCADIS. 2012c. *Area 3/Former Otsego Impoundment* Proposed Survey and Field Sampling Plan. October 2012.

ARCADIS BBL. 2007a. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Multi-Area Field Sampling Plan*. October 2007.

ARCADIS BBL. 2007b. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Multi-Area Health and Safety Plan*. May 2007.

Interstate Technology and Regulatory Council (ITRC). 2012, Incremental Sampling Methodology-ISM1, Washington D.C., ITRC Incremental Sampling Methodology Team, 417 p.

United States Army Corps of Engineers (USACE). 2009. Implementation of Incremental Sampling (IS) of Soils for the Military Munitions Response Program, Interim Guidance 09-02, Environmental and Munitions Center of Expertise, Huntsville, AL, 50 p.

Enclosures:

Figure 1	Area 3 Residential Evaluation Area for Floodplain Soils
Figure 2	Conceptual Sampling Design in Residential Area
Figures 3a-b	Proposed Floodplain and Bank Soil Samples
Figure 4	Proposed Floodplain Sampling in the Former Mill Race
Figure 5	Proposed Non PCB Sampling Locations

Appendix A Summary of June 2012 Area 3 Field Reconnaissance in Residential Areas

FIGURES

54-150-008-00
ROBIDOUX DALE F & DOROTHY
0.14 ACRES

54-022-040-00
MARLOW CHARLES E & SHARON L
0.23 ACRES

54-022-041-11
LICK STEVEN J & KARILYN F
0.23 ACRES

54-022-007-00
BRONSON JOSEPH P & KECIA P
0.23 ACRES

54-022-008-00
THOMPSON JOEL M
0.33 ACRES

0.092 ACRES

0.046 ACRES

0.013 ACRES

0.095 ACRES

0.22 ACRES

0.013 ACRES

54-150-007-00
PECKENS VERNON
0.14 ACRES

54-022-039-00
DETTMANN JONATHAN
0.11 ACRES

54-202-005-00
MEAD KYLE V
0.18 ACRES

54-202-007-00
WRIGHT JEFFREY T & JENNIFER
0.14 ACRES

54-022-042-10
JONES DANNY
0.22 ACRES

54-022-009-00
ADAMS TODD S & MARTHA A
0.15 ACRES

54-022-013-00
TOWN RAYMOND TRUST
0.15 ACRES

54-202-008-50
PATRICIA THOMAS
0.05 ACRES

54-022-044-00
KNIGHT DARYL & KATHY
0.52 ACRES

54-022-014-00
TOWN RAYMOND TRUST
0.038 ACRES

54-022-025-00
PATRICIA THOMAS
0.071 ACRES

54-022-045-00
BRONSON ELWIN & VIRGINIA
0.42 ACRES

54-022-012-00
MARTENS JOHN
0.16 ACRES

54-022-023-00
HARRIS DONALD JR
0.26 ACRES

NOTES:

1. DIGITAL ELEVATION MODEL ELEVATIONS AND AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.
2. BASED UPON DATA OBTAINED DURING FIELD SAMPLING PERFORMED BY ARCADIS IN 1993/1994, 2000, AND 2012.
3. A NUMBER OF CORES ARE CO-LOCATED WITH CORES FROM OTHER ARCADIS INVESTIGATIONS. IN EACH OF THESE CASES, MAXIMUM PCB CONCENTRATION IS INDICATED.
4. PARCEL BOUNDARIES PROVIDED BY ALLEGAN COUNTY.
5. CURRENT ALLEGAN COUNTY TAX PARCEL INFORMATION FOR PARCEL NOS. 54-202-008-50 AND 54-022-025-00 INDICATES CHANGE IN THE PARCEL OWNERSHIP. PARCEL MAPS IN THE AREA 3 SRI/FS WORK PLAN INCLUDED OLD INFORMATION.
6. ORIGINAL SOURCE OF FIGURE: ARCADIS MODIFIED WITH PERMISSION BY : AMEC E&I

0 175 350
Feet
GRAPHIC SCALE

LEGEND:

MAXIMUM SEDIMENT PCB RESULTS (MG/KG):
- ND
- < 1
- 1 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- > 50

MAXIMUM SOIL PCB RESULTS (MG/KG):
- ND
- < 1
- 1 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- > 50

- LIKELY RESIDENTIAL STRUCTURE
- 1 FT CONTOUR
- 5 FT CONTOUR
- NON-RESIDENTIAL
- ASSUMED RESIDENTIAL PROPERTY BOUNDARY
- MAINTAINED/CLEARED RESIDENTIAL AREAS (INTERPRETED FROM AIR PHOTOS)
- NATURAL/FORESTED AREAS (INTERPRETED FROM AIR PHOTOS)
- EXISTING SHORELINE (APPROXIMATE)

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 SUPPLEMENTAL FIELD SAMPLING PLAN

AREA 3 RESIDENTIAL EVALUATION AREA FOR FLOODPLAIN SOILS

Prepared by/Date: CSK
Checked by: ADV
Project Number: 3293131514

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FIGURE
GP-FSP 1

N:\INDUSTRIAL PROJECTS\Georgia-Pacific\GIS\Area3\Area 3\MXD\Fig-1-Maximum PCB Results - Area 3_ResidentialEvaluation.mxd 6/11/2013 3:21:52 PM

RIVER

LEGEND:

- EXISTING SHORELINE (APPROXIMATE)
- PROPERTY BOUNDARY (APPROXIMATE)
- DECISION UNIT - RESIDENTIAL BACKYARD
- DECISION UNIT - ECOLOGICAL EVALUATION
- CONTOUR (STUDY BOUNDARY) - 683 FT (NGVD)
- RESIDENTIAL STRUCTURES

0 100 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 SUPPLEMENTAL FIELD SAMPLING PLAN

CONCEPTUAL SAMPLING DESIGN IN RESIDENTIAL AREA

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Checked by: ADV
Project Number: 3293131514

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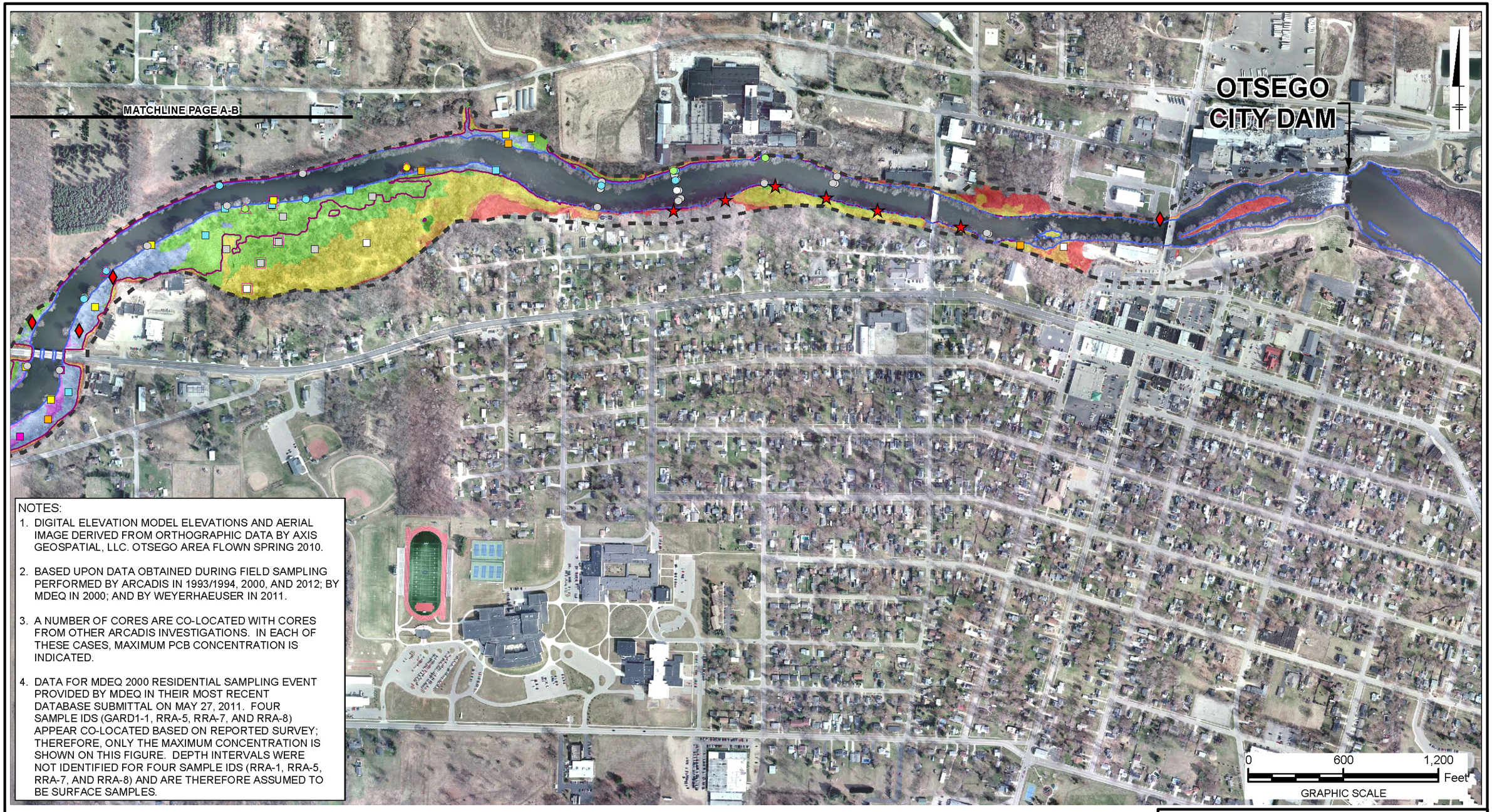
FIGURE 2

N:\INDUSTRIAL PROJECTS\Georgia-Pacific\GIS\Area3\Area 3\MXD\Fig 2-ConceptualModel-SamplingDesign-Residential Area.mxd 5/30/2013 11:48:49 AM



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3. A NUMBER OF CORES ARE CO-LOCATED WITH CORES FROM OTHER ARCADIS INVESTIGATIONS. IN EACH OF THESE CASES, MAXIMUM PCB CONCENTRATION IS INDICATED.
4. DATA FOR MDEQ 2000 RESIDENTIAL SAMPLING EVENT PROVIDED BY MDEQ IN THEIR MOST RECENT DATABASE SUBMITTAL ON MAY 27, 2011. FOUR SAMPLE IDS (GARD1-1, RRA-5, RRA-7, AND RRA-8) APPEAR CO-LOCATED BASED ON REPORTED SURVEY; THEREFORE, ONLY THE MAXIMUM CONCENTRATION IS SHOWN ON THIS FIGURE. DEPTH INTERVALS WERE NOT IDENTIFIED FOR FOUR SAMPLE IDS (RRA-1, RRA-5, RRA-7, AND RRA-8) AND ARE THEREFORE ASSUMED TO BE SURFACE SAMPLES.

LEGEND:

MAXIMUM SEDIMENT PCB RESULTS (MG/KG):
- ND
- < 1
- 1 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- > 50

MAXIMUM SOIL PCB RESULTS (MG/KG):
- ND
- < 1
- 1 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- > 50

- WEYERHAEUSER SAMPLE LOCATION
- MDEQ SEDIMENT SAMPLE LOCATION
- MDEQ SOIL SAMPLE LOCATION (SEE NOTE 4)
- PROPOSED SUPPLEMENTAL FLOODPLAIN SOIL LOCATION
- PROPOSED SUPPLEMENTAL BANK SOIL LOCATION
- 683 FT CONTOUR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- EXISTING SHORELINE (APPROXIMATE)

TOPOGRAPHIC ELEVATIONS (FT NGVD29):
- < 676
- 676 - 678
- 678 - 680
- 680 - 682
- 682 - 684
- 684 - 686
- 686 - 688
- 688 - 690
- > 690

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 SUPPLEMENTAL FIELD SAMPLING PLAN

PROPOSED FLOODPLAIN AND BANK SOIL SAMPLES

Prepared by/Date: CSK
Checked by: ADV
Project Number: 3293131514

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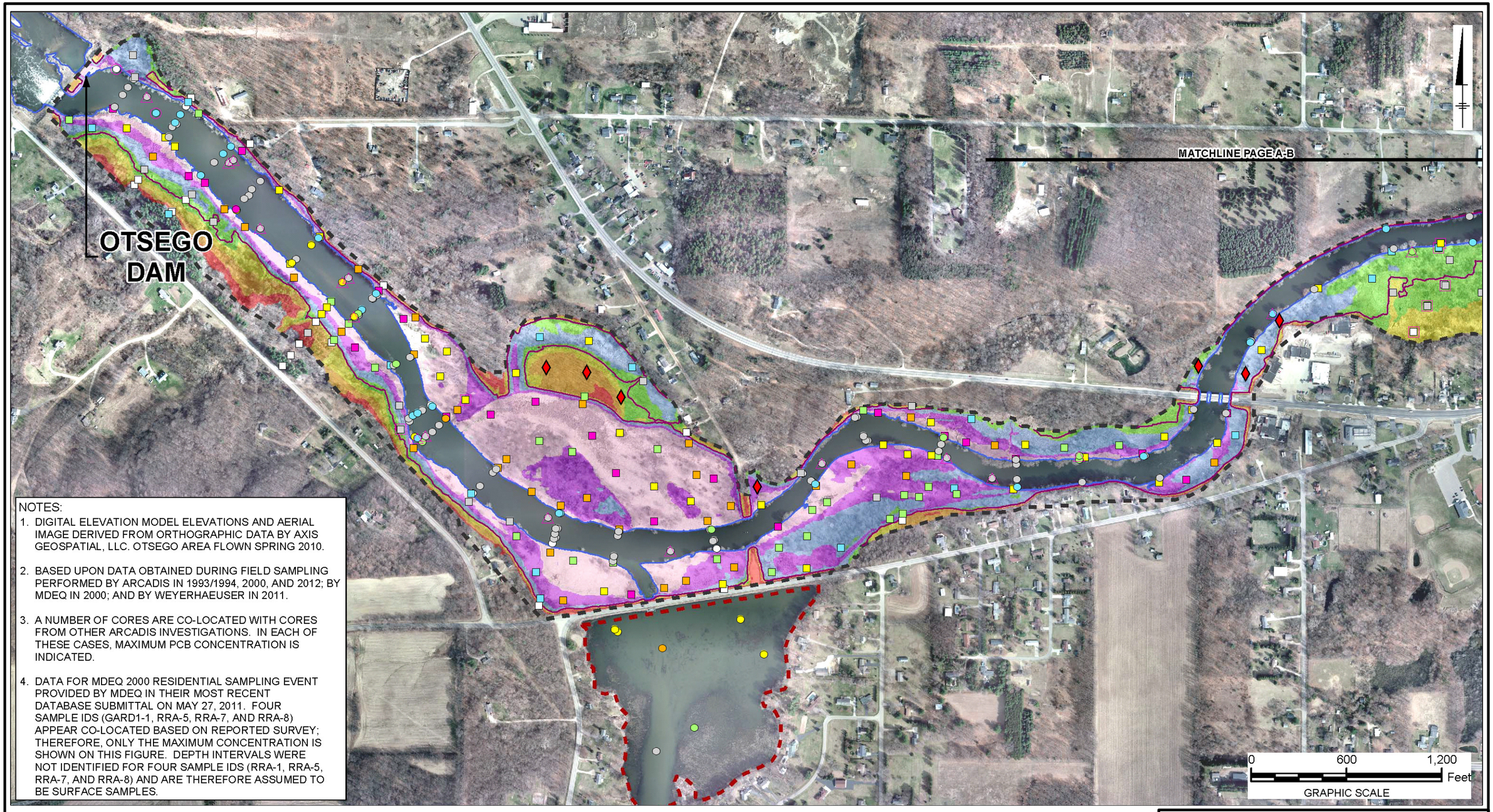
FIGURE 3a

N:\INDUSTRIAL PROJECTS\Georgia-Pacific\GIS\Area3\Area 3\MXD\Fig 3a-ProposedFloodplain_BankSoilSamples.mxd 6/13/2013 9:45:25 AM



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- 25 - 50
- > 50

MAXIMUM SOIL PCB RESULTS (MG/KG):
- ND
- < 1
- 1 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- > 50

- WEYERHAEUSER SAMPLE LOCATION
- MDEQ SEDIMENT SAMPLE LOCATION
- MDEQ SOIL SAMPLE LOCATION (SEE NOTE 4)
- PROPOSED SUPPLEMENTAL FLOODPLAIN SOIL LOCATION
- PROPOSED SUPPLEMENTAL BANK SOIL LOCATION
- 683 FT CONTOUR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- EXISTING SHORELINE (APPROXIMATE)

TOPOGRAPHIC ELEVATIONS (FT NGVD29):
- < 676
- 676 - 678
- 678 - 680
- 680 - 682
- 682 - 684
- 684 - 686
- 686 - 688
- 688 - 690
- > 690

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 SUPPLEMENTAL FIELD SAMPLING PLAN

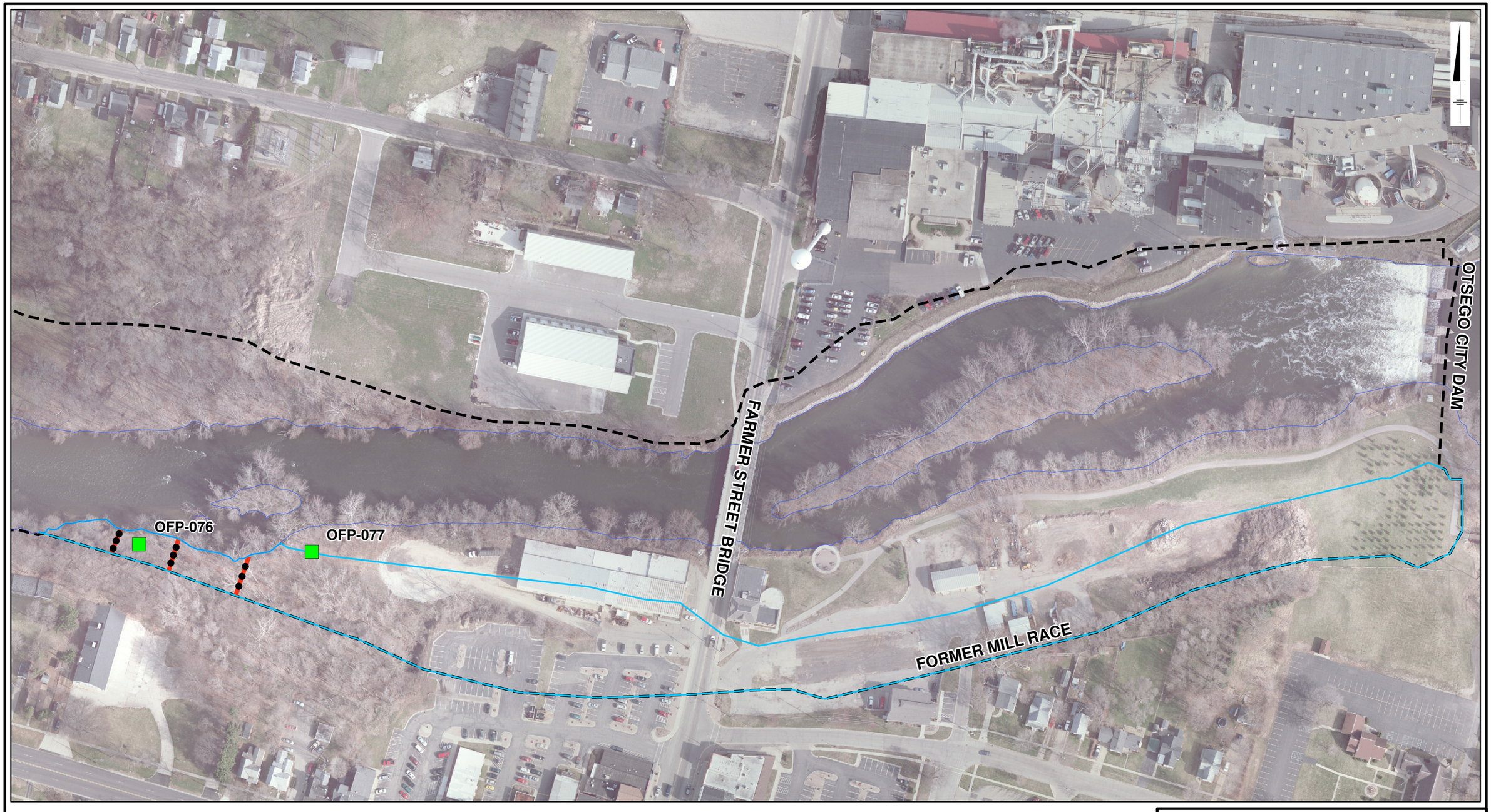
PROPOSED FLOODPLAIN AND BANK SOIL SAMPLES

Prepared by/Date: CSK
Checked by: ADV
Project Number: 3293131514

amec

FIGURE 3b

N:\INDUSTRIAL PROJECTS\Georgia-Pacific\GIS\Area3\Area 3\MXD\Fig 3b-ProposedFloodplain_BankSoilSamples.mxd 6/13/2013 9:44:58 AM



LEGEND:

- PROPOSED FLOOPLAIN SOIL SAMPLE LOCATION
- PROPOSED FLOODPLAIN TRANSECT
- 2012 SRI SOIL SAMPLE
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- MILL RACE SHORELINE (APPROXIMATE)
- SHORELINE (APPROXIMATE)

NOTE:

1. THREE SOIL CORES ARE PROPOSED ALONG EACH OF THE THREE FLOODPLAIN TRANSECTS IN THE WESTERN END OF THE FORMER MILL RACE.
2. ORIGINAL SOURCE OF FIGURE: ARCADIS MODIFIED WITH PERMISSION BY : AMEC E&I

0 150 300 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 SUPPLEMENTAL FIELD SAMPLING PLAN

PROPOSED FLOODPLAIN SOIL TRANSECTS IN THE FORMER MILL RACE

Prepared by/Date: CSK
Checked by: ADV
Project Number: 3293131514

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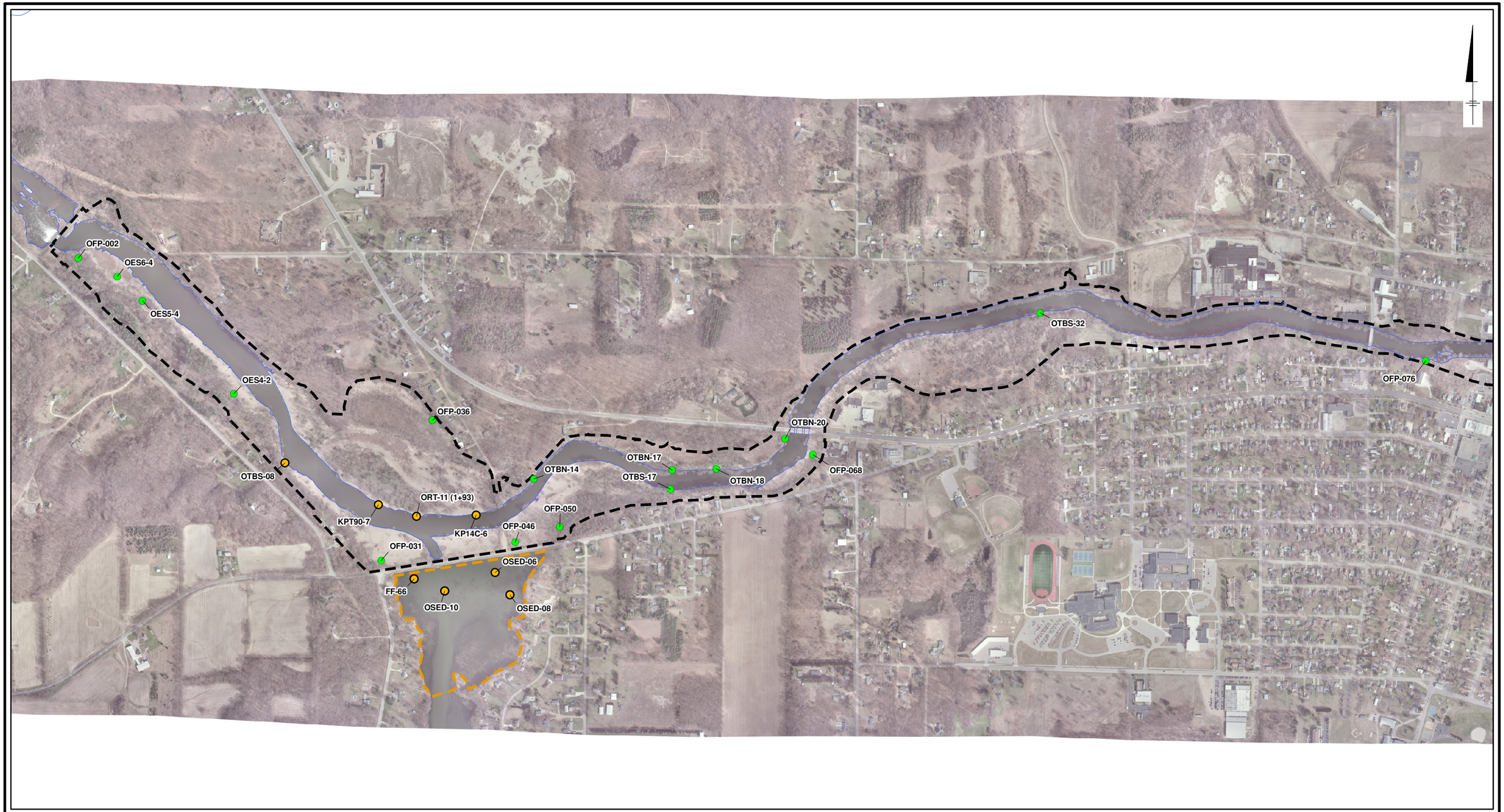
FIGURE 4

N:\INDUSTRIAL PROJECTS\Georgia-Pacific\GIS\Area3\Area 3\MXD\Fig 4-FormerMillRace_ProposedFloodplainSampling.mxd 6/13/2013 9:56:21 AM



LEGEND:

- PROPOSED FLOODPLAIN SAMPLE LOCATION
- PROPOSED SEDIMENT SAMPLING LOCATION
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PNE CREEK STUDY AREA BOUNDARY

NOTE:

1. ORIGINAL SOURCE OF FIGURE: ARCADIS MODIFIED WITH PERMISSION BY : AMEC E&I

0 1,000 2,000 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 SUPPLEMENTAL FIELD SAMPLING PLAN

PROPOSED NON PCB SAMPLING LOCATIONS

Prepared by/Date: CSK
Checked by: ADV
Project Number: 3293131514

amec

FIGURE 5

N:\INDUSTRIAL PROJECTS\Georgia-Pacific\GIS\Area3\Area 3\MXD\Fig-5-ProposedNonPCBSamplingLocations.mxd 6/13/2013 9:49:56 AM

APPENDIX A

Summary of June 2012 Area 3 Field Reconnaissance in Residential Areas

2012 Area 3 Field Reconnaissance – Field Notes for Residential Parcels

Table 1 – Area 3 Reconnaissance Notes for Residential Parcels

Photo Number[1]	Date	Field Notes	Parcel Owner	Parcel Number
001	6/26/2012	Residential property with lawn and rock (cobbles/boulders) lined bank. Grey materials under rock face.	Kyle V. Mead	54-202-005-00
002, 003	6/26/2012	Residential property with lawn extending to river. Grey clay below roots.	Patricia Thomas[2]	54-202-008-50, 54-022-025-00
004, 005	6/26/2012	Residential property with lawn extending to river and rock (brick/cinder/cobble) lined bank. Small amounts of grey materials under rock face.	Donald Harris Jr.	54-022-023-00
006, 251, 252	6/26/2012, 6/29/2012	Residential banks with grey material	Town Raymond Trust	54-022-013-00, 54-022-014-00
007, 008	6/26/2012	Forested area with bank full elevation at top of bank (potentially wetland). Grey clay in bank.	Todd S. & Martha A. Adams	54-022-009-00
009, 010	6/26/2012	Bank full elevation is at top of bank with wetland beyond. Wooded area.	Joel M. Thompson	54-022-008-00
011, 012	6/26/2012	Residential lawn with forested cover.	Elwin & Virginia Bronson	54-022-045-00
013, 014, 250	6/26/2012, 6/29/2012	Wooded vertical back with shelf to bank full. Grey materials in the bank.	Daryl & Kathy Knight	54-022-044-00
015, 016	6/26/2012	Residential lawn above vertical bank (shelf to bank full) and dock.	Vernon Peckens	54-150-007-00

Notes:

1. Photos associated with each parcel are included below.
2. Current Allegan County tax parcel information indicates change in the parcel ownership. Parcel maps in the Area 3 SRI/FS Work Plan include old information.

1. Reconnaissance Item No. ORBS-16
    - Residential property with lawn and rock (cobbles/boulders) lined bank. Grey materials under rock face.
    - Property Owner - Kyle V. Mead
    - Parcel Number - 54-202-005-00

Photo 001

2. Downstream of Reconnaissance Item No. ORBS-16
    - Residential property with lawn extending to river. Grey clay below roots.
    - Property Owner - Patricia Thomas
    - Parcel Number - 54-202-008-50, 54-022-025-00

Photo 002

Photo 003

3. Reconnaissance Item No. ORBS-18
    - Residential banks with grey material
    - Property Owner - Town Raymond Trust
    - Parcel Number - 54-022-013-00, 54-022-014-00

Photo 006

Photo 251

Photo 252

4. Downstream of Reconnaissance Item No. ORBS-18
    - Forested area with bank full elevation at top of bank (potentially wetland). Grey clay in bank.
    - Property Owner - Todd S. & Martha A. Adams
    - Parcel Number - 54-022-009-00

Photo 007

Photo 008

5. Reconnaissance Item No. ORBS-19
    - Bank full elevation is at top of bank with wetland beyond. Wooded area.
    - Property Owner - Joel M. Thompson
    - Parcel Number - 54-022-008-00

Photo 009

Photo 010

6. Reconnaissance Item No. ORBS-20
    - Residential lawn with forested cover.
    - Property Owner - Elwin & Virginia Bronson
    - Parcel Number - 54-022-045-00

Photo 011

Photo 012

7. Reconnaissance Item No. ORBS-21
    - Wooded vertical back with shelf to bank full. Grey materials in the bank.
    - Property Owner - Daryl & Kathy Knight
    - Parcel Number - 54-022-044-00

Photo 013

Photo 014

Photo 250

8. Upstream of Otsego City Wastewater Treatment Plant
    - Residential lawn above vertical bank (shelf to bank full) and dock.
    - Property Owner - Vernon Peckens
    - Parcel Number - 54-150-007-00

Photo 015

Photo 016

ORBS-4/-5 – gray material on ban; appears to be ~20’ long and 5’ wide; starts around -4 and ends around -5; page 1 of fieldbook

Pt 162 – gray clay on bank; unknown extent

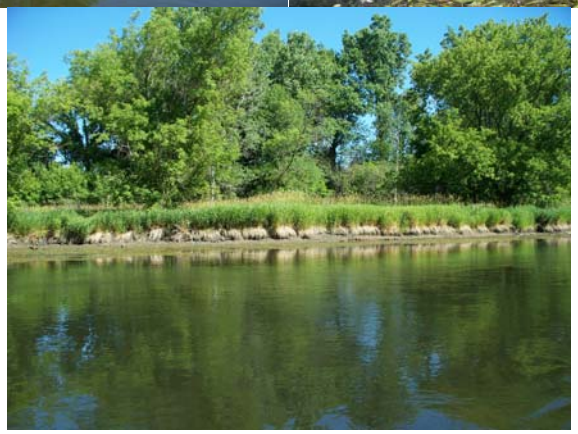
Pt 286 – light gray clay, slight odor; in former channel; downstream of pt 160 and 40 ppm max PCB

Left photo looking upstream (toward Farmer St); right photo looking downstream (toward river)

Pt 163 – gray silt and clay, little sand; material on residential bank; material appears to extend down to pt 164 where residential property (mowed area) ends

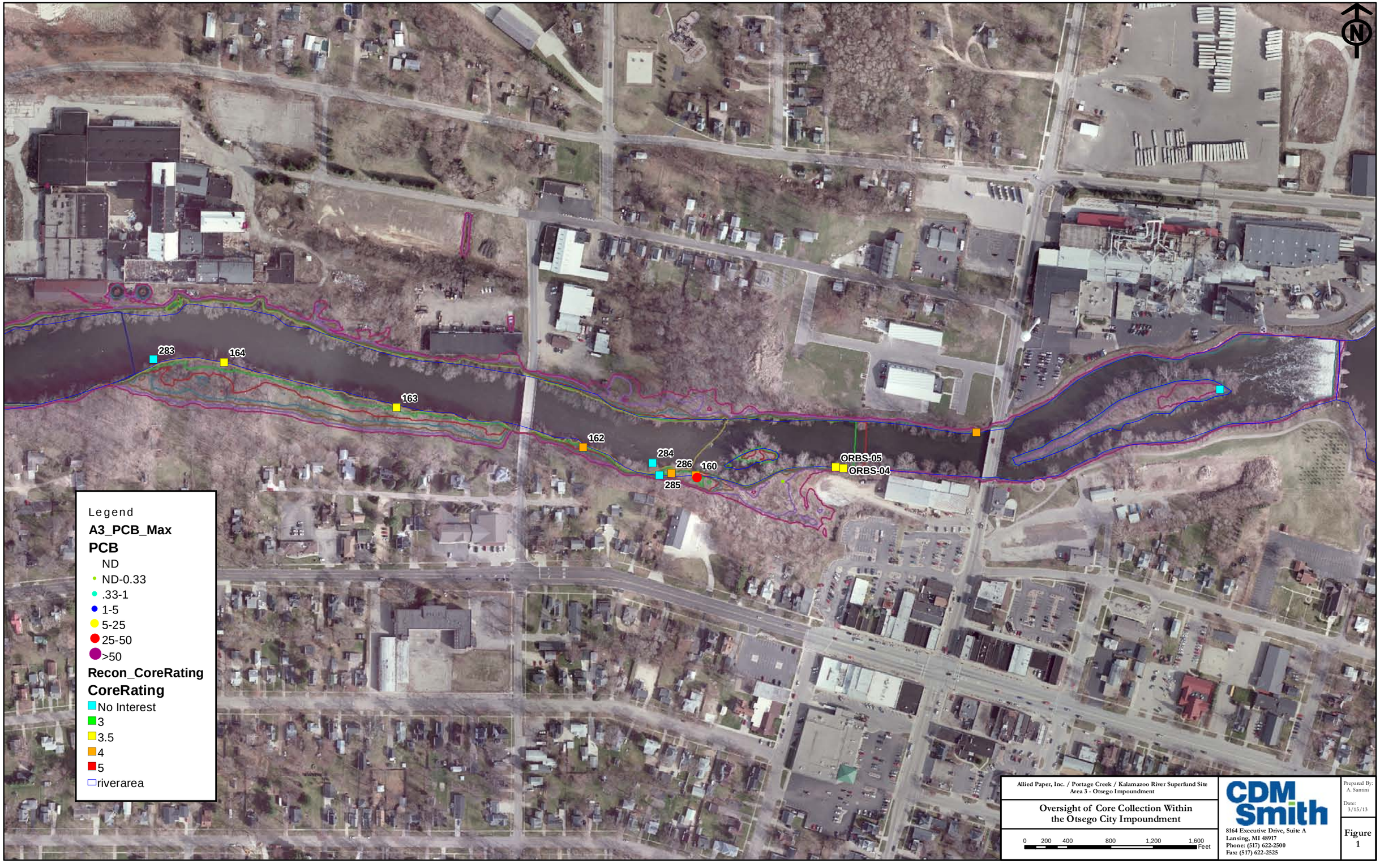

Pt 169 – gray clay over brown clay (not photo – max PCB ~18 ppm); Pt 170, pt 171, photo 2177 – gray clay on bank.





Pt 172 – gray clay on bank

Pt 229 – brown organic silt over gray clay, moderate odor



Allied Paper, Inc. / Portage Creek / Kalamazoo River Superfund Site
Area 3 - Otsego Impoundment

Oversight of Core Collection Within the Otsego City Impoundment

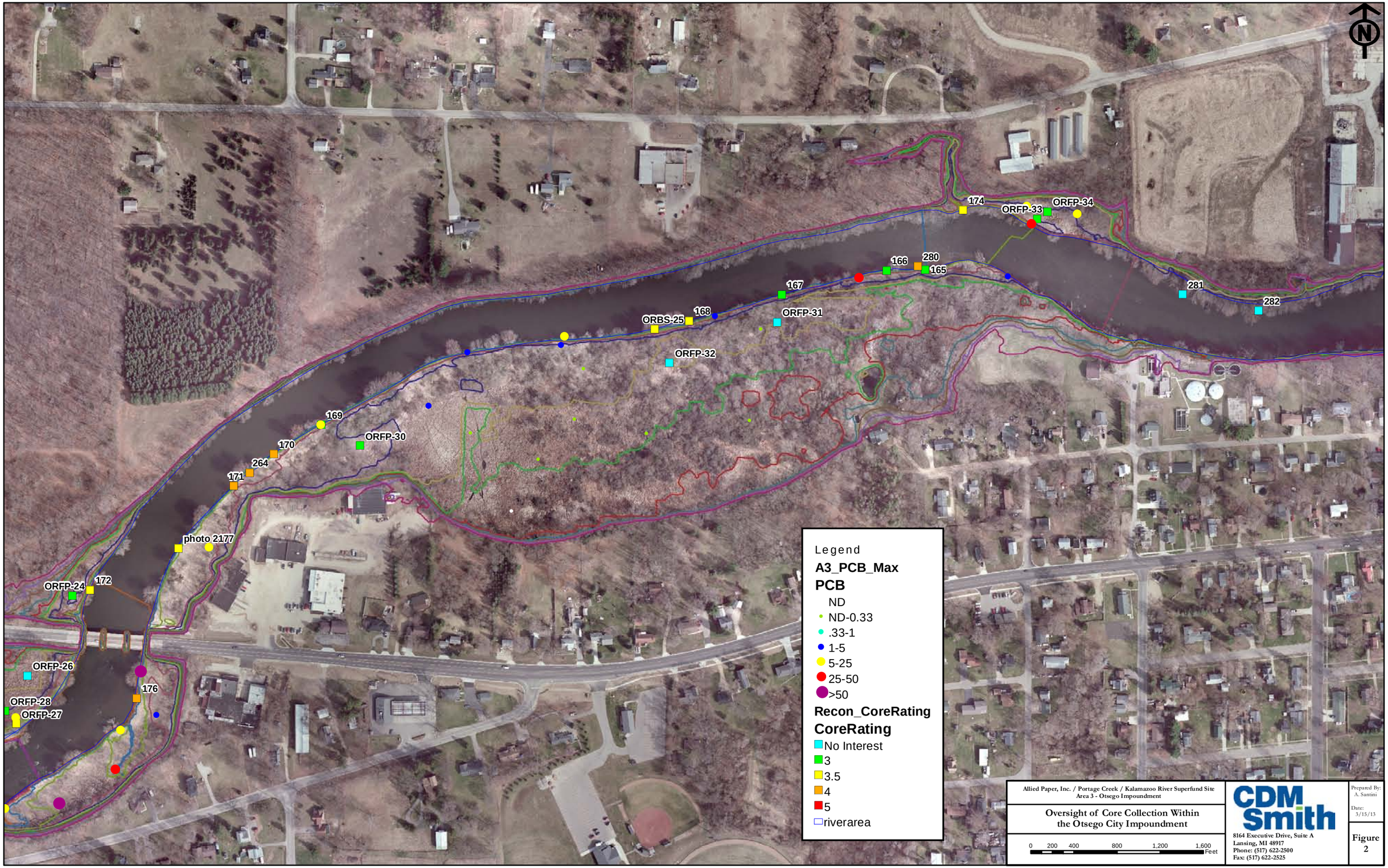
0 200 400 800 1,200 1,600 Feet

CDM Smith
8164 Executive Drive, Suite A
Lansing, MI 48917
Phone: (517) 622-2500
Fax: (517) 622-2525

Prepared By: A. Santini

Date: 3/15/13

Figure 1


N
174
ORFP-33
ORFP-34
166
280
165
167
281
282
ORBS-25
168
ORFP-31
ORFP-32
169
ORFP-30
170
264
171
photo 2177
ORFP-24
172
ORFP-26
176
ORFP-28
ORFP-27
Legend
A3_PCB_Max
PCB
ND
ND-0.33
.33-1
1-5
5-25
25-50
>50
Recon_CoreRating
CoreRating
No Interest
3
3.5
4
5
riverarea
Allied Paper, Inc. / Portage Creek / Kalamazoo River Superfund Site
Area 3 - Otsego Impoundment
Oversight of Core Collection Within
the Otsego City Impoundment
0 200 400 800 1,200 1,600
Feet
CDM Smith
8164 Executive Drive, Suite A
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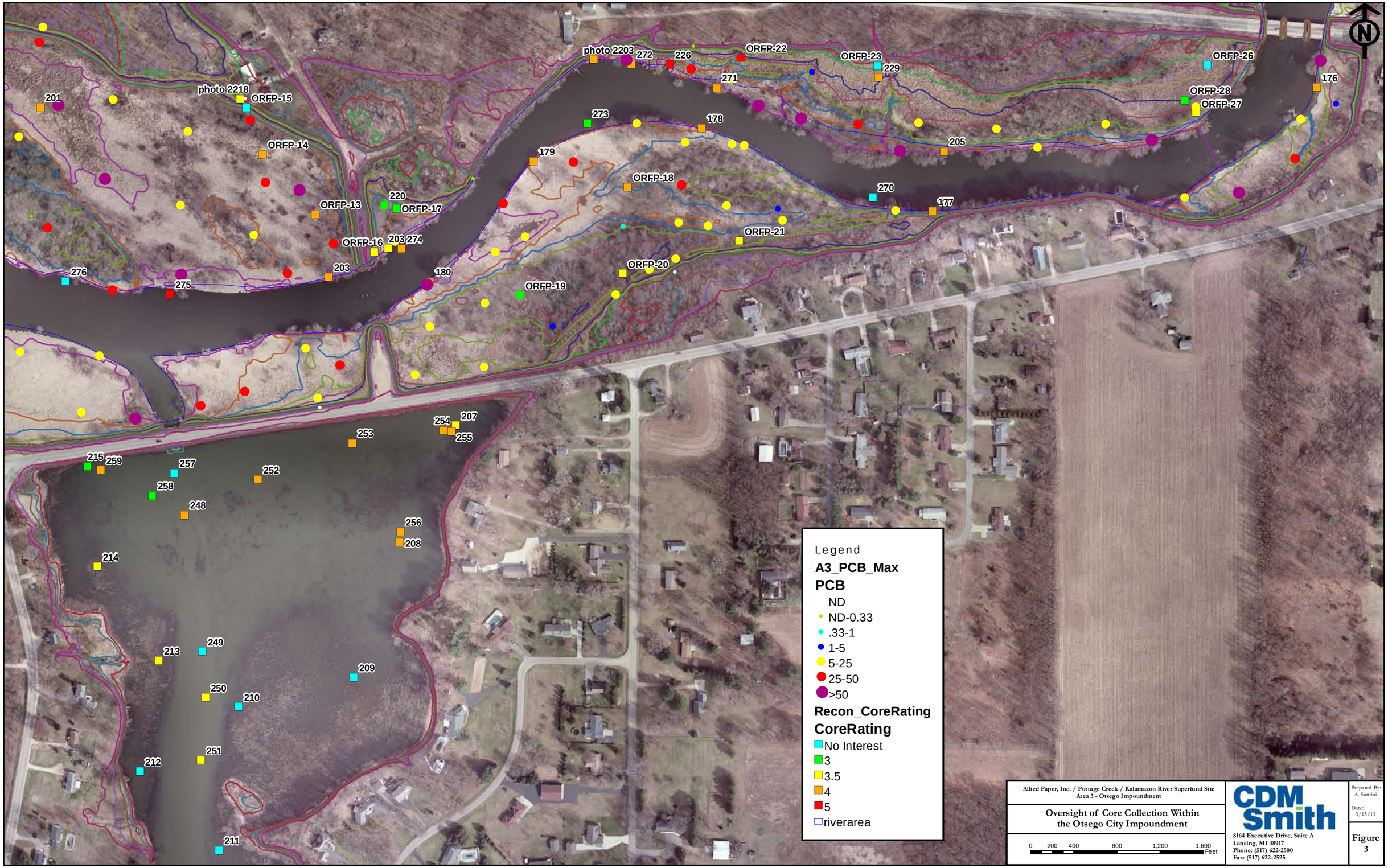
Phone: (517) 622-2500
Fax: (517) 622-2525
Prepared By:
A. Santini
Date:
3/15/13
Figure
2



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0 200 400 800 1,200 1,600 Feet

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Figure 3